IN THE SPECIFICATION

Following is a marked-up version of each amended paragraph of the subject patent application. The Examiner is requested to delete the indicated paragraph and replace it with the amended paragraph.

Replace paragraph [0003] with the following.

[0003] The present National Airspace System (NAS) weather support system provides extensive weather data for pre-flight planning and limited weather information during flight. This weather data is typically received verbally, during a pre-flight weather briefing. Through in-person weather briefings, weather maps and charts of current and forecast weather conditions are available. Also, weather satellite images and copies of weather radar displays can be provided to the pilot during the briefing. Communications with air traffic controllers during flight offers an opportunity for the pilot to collect up-to-date [[up to date]] weather information, although the information is provided verbally and based on interpretation of weather information by the controllers. En route alpha-numeric messages are provided to describe generally the weather enroute and at the intended destination, but is available only to airlines and transports equipped with ACARS receiving systems.

Replace paragraph [0020] with the following.

[0020] The radar imagery data comprises a plurality of pixels wherein the pixel color identifies a particular weather characteristic and each pixel represents a predetermined geographical area. Typically, such radar imagery data uses a limited number of colors, for instance, sixteen colors, where each pixel color represents a different precipitation intensity. Since precipitation occurs in localized areas, the weather data presented on the radar image usually occurs in small pixel clusters representing shower activity of varying intensity throughout ~~through out~~ the cluster. Since rain showers seldom occur in isolation (e.g., as represented by only one or two adjacent pixels) such pixels are generally false radar return readings, representing, perhaps, a bird flock, a plane or another radar return anomaly. Also, these isolated color pixels are separated by large distances where there is no precipitation activity. The algorithm of the present invention identifies these isolated pixels and eliminates them from consideration. Thus the algorithm according to the present invention takes advantage of known weather characteristics to provide an efficient data encoding technique.

Replace paragraph [0026] with the following.

[0026] Now that the redundant and extraneous data has been removed, the actual data compression process begins at a step 66. This process is executed by assigning predetermined bit patterns (also referred to as instructions) to successive pixels in the image. In essence, each pixel is represented as one of a small set of colors, coded as efficiently as possible (i.e., using a minimum number of bits) as color codes. The process of assigning these color code bit patterns or ~~instructions~~ instructions, encodes and compresses the image bits so that fewer data bits must be sent over the data link, but still allowing recreation of the image at the receiving end. The radar image is scanned line by line and pixel by pixel (in one embodiment from the top left corner downwardly to the bottom right corner) and encoded using the instructions according to the present invention. Since these instructions are also known at the receiver, the image can later be recreated in the aircraft 1 by the reverse process.

Replace paragraph [0033] with the following.

[0033] For example, the data segment instruction below begins with the data segment instruction identifier 11. The value of the next six bits is seven, indicating that the color for each of the next seven bits follows the instruction, that is, this data segment instruction applies to the next seven consecutive pixels in the image.

11000111 11 10 10 10 10 ~~01~~ 01 11

Replace paragraph [0036] with the following.

[0036] One observation in conjunction with the teachings of the present invention recognizes that if one instruction is received at the aircraft 1 incorrectly, the consequences of this error will propagate throughout the remainder of the image, rendering the remainder of the image useless as color pixels will not be placed correctly in the image. Obviously, in an error-free transmission process, the above algorithm works perfectly. In one test of the compression algorithm conducted on a four kilometer square pixel (i.e., four kilometers on a side) of weather radar image for the entire continental United States, a compression ratio~~n~~ of between 113 and 140 was achieved with no loss of data integrity. It is recognized, however, that all transmission channels are not perfect and introduce errors into the transmitted bit stream. If additional protection from these errors is desired, in one embodiment of the present invention a line

designator data field can be placed at the end of the instruction that displays the last pixel on one or more lines. This line designator identifies the scan line to which the instruction pertains. The insertion of the line designator slightly reduces the total compression ratio of the algorithm, but also limits the effects of data transmission errors to single raster lines and in this way prevents the propagation of an error to other lines in the raster image. Adding, for example, a 11 bit line designator, (typically there are approximately 1000 lines in the image and therefore 11 bits can designate $2^{11} = 2048$ lines) adds about 600 bytes to a weather data file compressed according to the teachings of the present invention, reducing the compression ratio from about 113 to 140 to about 108 to 135. Thus the use of this error detecting information within the file does not seriously detract from its high compression ratio. In another embodiment, a line designator can be included at the beginning of each line, and in yet another embodiment line designators can be placed in the data stream at predetermined line intervals. Since the multiple black line instruction pertains to several display lines, a single line designator can be placed after the last image line of that instruction.